DETAILED ACTION

Response

1. This Office Action is in response to the arguments filed April 27, 2011. Claims 15-27 are pending and are rejected finally for the reasons given below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 15-23 and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. (US 6,455,179) in view of Tanaka et al. (US 6,803,142) and Iwamura (US 6,400,122).

Regarding claims 15 and 18, Sugita et al. teach a fuel cell system for use in a vehicle (abstract, column 1 lines 5-6). The fuel cell system has two fuel cell stacks having stacks of fuel cells with end plates at both ends (16, 24) (Figures 1 and 2). Stacking bolts (154) maintain the cells in a stack (Figure 2).

Sugita et al. teach brackets to hold the fuel cell system to the vehicle (168 of Figure 2). There are bolts within the brackets that are perpendicular to the fixed direction of the fuel cell stack (170a in Figure 2).

As for claims 17 and 25, Sugita et al. further teach rubber mounts for the brackets that attach the fuel cell to the vehicle (column 6 lines 65-67).

With further regard to claims 18 and 26, Sugita et al. teach a fluid supply/discharge block (28) (column 5 line 53 - column 6 line 26).

Regarding claim 19, Sugita et al. teach end plates (24), one at one end of the stack and a second attaching the piping mechanism to the stack. Between the attachment plate and the end plate (24) is gap containing springs, which serve to tighten the stack (column 6 lines 27-39). One of ordinary skill in the art at the time the invention was made would recognize that springs, by their nature, would allow for expansion of the stack.

As for claims 20 and 21, Sugita et al. fail to teach the depression, projection, and seal within the expansion/contraction mechanism, which for the purposes of examination will be interpreted to be the fluid supply block, second plate, first plate and springs, since the mechanism would not function as claimed without these components. One of ordinary skill in the art would recognize that the expansion/contraction mechanism of Sugita et al. would inherently have a projection connecting the fluid supply block with the fuel cell, since without such a connection fuel could not be provided to or removed from the fuel cell stack. Further, a seal would be necessary or at the very least obvious in order to prevent leakage. As long as there is attachment between the fluid supply/discharge block and the stack, the structure of Sugita et al. would function as the structure of the instant invention does. A depression would be inherent in order to provide a place for the projection to connect the stack and the fluid supply/discharge block.

With regard to claim 22, Sugita et al. teach that the end plates are conductive (abstract).

As for claim 23, Sugita et al. teach two stacks arranged in parallel and electrically connected, with a fluid supply/discharge block attached to both stacks, but fail to teach whether the stacks are electrically connected in parallel or series (Figure 1, column 9 line 49 - column 10 line 24). It would have been obvious to one having ordinary skill in the art at the time the invention was made attach the stacks in series if it was desired to maximize voltage produced by the system.

Regarding claims 27, Sugita et al. teach a spring (146 a,b,c) interposed between the front end plate and the fluid supply/discharge block (Figure 2).

Sugita et al. fail to teach a case and that the bolts holding the fuel cell stack to the vehicle penetrate an end plate and the case.

Tanaka et al. teach a fuel cell having a housing case (10) that provides mounts (123, 130) for fixing the end plates of the fuel cell and case using bolts (104) (abstract). The bolts are electrically insulated (125) (column 3 lines 22-31).

Tanaka et al. further teach that the mounts give the housing structure that allows it to withstand the load concentration on the mount (column 4 lines 1-4).

It would be desirable to use a case such as the housing case of Tanaka et al. in the fuel cell of Sugita et al. since the case would provide protection to the fuel cell from the outside environment. Further, it would be desirable to use the mounts of Tanaka et al. with the mounts of Sugita et al. to attach the case to the end plates of the fuel cell

and attach the encased fuel cell to the vehicle, since the configuration of the mounts of Tanaka et al. allow the case to withstand the load concentration on the mount and the mounts of Sugita et al. attach the fuel cell system to the vehicle.

With further regard to claim 18, it would be desirable for the bolts (166 a, b) of Sugita et al. to penetrate the supply block instead of a bracket since it would provide more support for the fuel cell system by changing the load concentration, as Tanaka et al. teach the importance of load concentration. By supporting the fuel cell of Sugita et al. at the supply block, the supply block would have more support than with the use of the brackets, which would be desirable to protect the piping mechanisms that could be carrying volatile reactants such as pure hydrogen.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a case for the fuel cell of Sugita et al. such as taught by Tanaka et al. since the case would provide protection to the fuel cell from the outside environment. It would also have been obvious to one having ordinary skill in the art at the time the invention was made to use the mounts of Tanaka et al. with the mounts of Sugita et al. to attach the case to the end plates of the fuel cell and attach the encased fuel cell to the vehicle, since the configuration of the mounts of Tanaka et al. allow the case to withstand the load concentration on the mount and the mounts of Sugita et al. attach the fuel cell system to the vehicle.

Sugita et al. in view of Tanaka et al. fail to teach that both ends of the bolt are located exterior to the case.

Iwamura teaches a battery holding device comprising a stack of batteries (1) contained within a housing members (9, 28) (Figure 6).

Iwamura further teaches a through bolt (27) passing through the casing (9), which serves as an endplate because it is located at the end of the row of batteries and holds them in a row. Iwamura teaches that the bolt goes from the first side to the second side of the end plate, or casing (column 4 lines 58-65).

It is further taught that the through bolt prevents loosening of the module (column 7 lines 34-43).

Iwamura and Tanaka et al. are analogous art because both are concerned with using bolts to fix a housing member to an endplate.

It would have been obvious to extend the bolts (166 a, b) of Tanaka from the first side to the second side of the end plate since, as is taught by Iwamura, the through bolt prevents the loosening of the module.

With further regard to claim 18, it would have been obvious to extend the bolt, discussed above, of Sugita et al. in view of Tanaka et al. through the supply block since the skilled artisan would easily recognize that a through bolt would prevent loosening of the module, and the skilled artisan would be capable of rearranging the supply block to extend the bolt through in order to enjoy the added security against loosening provided by a through bolt.

With regard to claims 15 and 18, the bolts of Sugita et al. in view of Tanaka et al. and Iwamura, a recitation of the intended use of the claimed invention must result in a

structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. The bolt of Sugita et al. in view of Tanaka et al. and Iwamura is structurally the same as the claimed bolt, and therefore is capable of bearing a load exerted in the fixed direction by the fuel cell stack.

4. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sugita et al. in view of Tanaka et al. and Iwamura as applied to claim 19 above, and further in view of Groppel (US 3,856,573).

The teachings of Sugita et al., Tanaka et al. and Iwamura as discussed above are incorporated herein.

Sugita et al. in view of Tanaka et al. and Iwamura fail to teach that the fluid supply/discharge block is made of an electrically nonconductive material.

Groppel teaches plastic channels for supply and discharge of reactants to a fuel cell (column 4 lines 9-13).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use plastic channels as the piping materials of Sugita et al., since plastic materials would be more resistant to chemical wear by harsh chemicals that develop in fuel cell systems.

Response to Arguments

5. Applicant's arguments filed April 27, 2011 have been fully considered but they are not persuasive.

Applicant argues, on pages 4 and 8, that the prior art does not teach a bolt disposed through a fluid supply/discharge block. The examiner disagrees.

As is discussed in the above rejection, such an arrangement would have been obvious to one having ordinary skill in the art over the teachings of Sugita et al. in view of Tanaka et al. Applicant argues that there is no suggestion to use a bolt in the fluid/supply block, but Tanaka et al. teaches that a bolt may be moved in order to change the load concentration on the bolt. In view of those teachings, the ordinarily skilled artisan would be motivated to move a bolt, such as through a fluid supply/discharge block. The examiner does not understand how one having ordinary skill in the art would be unable to move a bolt within a fuel cell stack. Furthermore, Applicant provides no indication that the location of a bolt in the fluid supply/discharge block somehow provides unexpected results.

Applicant also argues that Iwamura et al. is not analogous art to Sugita et al. and Tanaka et al. The examiner has addressed these arguments in the Non-Final Rejection mailed December 6, 2010.

Applicant further argues that Iwamura et al. do not teach several limitations that are taught by Sugita et al. and Tanaka et al. In response to applicant's arguments

against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alix Elizabeth Echelmeyer whose telephone number is (571)272-1101. The examiner can normally be reached on Mon-Fri 7-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ula Ruddock can be reached on 571-272-1481. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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